Interior and Exterior of a Quadrilateral

A quadrilateral is a closed figure made of four line segments. It divides the plane into two parts:

1. Interior:

The inner region enclosed by the sides of the quadrilateral.

Any point inside the boundary is called an interior point.

2. Exterior:

The outer region that is outside the boundary of the quadrilateral.

Any point outside the sides is called an exterior point.

Example to Understand:

Imagine a square-shaped garden.

- The area inside the garden is its interior.
- The area outside the garden is its exterior.

Properties:0…….

- The interior of a quadrilateral is bounded by its four sides.
- The exterior is the unbounded region outside the quadrilateral.
- The sum of interior angles of any quadrilateral is 360°.
- The exterior angles of a quadrilateral are formed when sides are extended.

Note on Exterior Angles:

- An exterior angle of a quadrilateral is formed by extending one side at a vertex.
- Each exterior angle + its adjacent interior angle = 180° (They form a linear pair).

Example 1

In quadrilateral PQRS, ∠P = 110°, ∠Q = 90°, ∠R = 80°. Find ∠S.

Solution:

Sum of interior angles of a quadrilateral = 360°

Given: ∠P + ∠Q + ∠R + ∠S = 360°

110° + 90° + 80° + ∠S = 360°

⇒ 280° + ∠S = 360°

⇒∠S = 360° − 280° = 80°

Answer:000∠S = 80°

Example 2

If one of the interior angles of a quadrilateral is 70°, what will be its exterior angle at the same vertex?

Solution:

Exterior angle + Interior angle = 180°

Given: Interior angle = 70°

So, Exterior angle = 180° − 70° = 110°

Answer: Exterior angle = 110°

Summary Points

- The interior is the space inside the quadrilateral.
- The exterior is the space outside the quadrilateral.
- Interior angle + exterior angle at any vertex = 180°.
- The sum of all interior angles = 360°.
- Exterior angles help in understanding linear pairs and angle relationships.